

PROF. HEISENBERG GIVES SPEECH ON QUANTUM THEORY

Lecture is Attended by Over
300 Faculty Members
and Students

LARGER ROOM NECESSARY

"Pleased With Reception" Says
Professor in Interview
With Reporter

"Indetermination", the subject of the lecture given last Friday afternoon by Professor Werner Heisenberg, was the first of a series of nine talks on "Recent Developments in Quantum Mechanics" which are to be given at the Institute within the next three weeks.

Friday's lecture was attended by about three hundred, including many students and members of the faculty, and several prominent persons of this vicinity who are not connected with the Institute. The large crowd made it necessary to move from Room 4-231 to 4-270, and it soon became apparent that the room would not be large enough to hold the audience, and the group moved to Room 10-250, where the lecture was finally given.

When interviewed on Friday afternoon by a member of THE TECH staff, the Professor appeared to be very much pleased with the reception accorded him. When asked his opinion of the Institute he replied that since he had been here only two hours, he had had no time to form much of an opinion, but he added that the buildings were attractive, and everyone had been very good to him. This is the Professor's first visit to the United States, and he stated that he liked the country a great deal, being greatly impressed by the size of the buildings and the activity in the harbor of New York, where he landed upon his arrival last Monday afternoon.

(Continued on Page 4)

Dr. Rehbock Gives Series of Talks

"Hydraulic Experimentation"
Lectures Will Begin
on Thursday

"Hydraulic Experimentation" is the subject of a series of nine lectures to be given at the Institute by Dr. Ing. Theodor Rehbock, Professor of Hydraulics at the Technische Hochschule, Karlsruhe, Germany. The lectures, which are sponsored by the Department of Civil and Sanitary Engineering, will consist of a description of the methods and laws of model experimentation work as carried on at the Karlsruhe Laboratory, and the rules of procedure for constructing and operating such a laboratory.

Both moving pictures and lantern slides will be used to illustrate the addresses which will be held in Room 5-330 at 2 o'clock on March 21, 22, 26, 27 and 29, and on April 2, 3, 5, and 9. All who desire to hear the lectures are invited to attend.

A.I.E.E. HOLDS OPEN DISCUSSION FRIDAY

Charles A. Turner '29 and Malcolm M. Hubbard '29 will be the principle speakers when the student branch of the A. I. E. E. holds its first open discussion of the year on March 22. The meeting is to be held in Room 10-275 at 3 o'clock, and will be patterned as nearly as possible after the meetings of the parent branch of the society. After the two principle speakers, the remainder of the afternoon's program will be taken up by a series of informal talks by students present, the entire program being carried out by the students themselves.

Turner is to speak on "An Outline of the Development of Electric Lighting," while Hubbard's topic will be "Lighting in Industry." The meeting will last until five o'clock, and student the branch invites all who are interested in taking part in the discussion itself, as the purpose of the meeting is primarily that of bringing out student opinion.

Swimming Manager Gets Thrown Into the Drink

Ready! Get set! Here goes! T. Bryce Spruill, '30, manager of the swimming team, completely clothed, went hurtling through the air and struck the water with a resounding splash, and sank out of sight. Reappearing a moment later, he swam to the edge of the pool and drippingly climbed out, accompanied by the laughter of the spectators who thoroughly enjoyed the spectacle.

Not of his own free will did Spruill take his bath. Instead he was thus rudely precipitated into the drink by a dozen willing arms while a dozen more stood ready to assist if necessary. It was the carrying out of the age-old custom of ducking the manager on the day of the last meet. This was accomplished last Saturday afternoon at the University Club at the close of the New England Intercollegiate by the members of the team and provided an unexpected diversion for those present.

T.C.A. Committee Nominates Men to Serve Next Year

F. N. Dickerman, H. O. Pattison,
and T. A. Riehl Named
for Presidency

Fred N. Dickerman '30, Henry O. Pattison '30, and Theodore A. Riehl '30 have been nominated by the T. C. A. Nominating Committee for president of that organization for the coming year. No specific men have been named for vice president as the two men who are not elected president automatically become the nominees for vice president. William J. Harris '30, and Reginald W. Tarr '30 have been nominated for treasurer.

Dickerman has been in charge of the deputations this year and has also served as vice president. Pattison is the present general manager of the yearbook and a member-at-large of the executive committee. Riehl is treasurer, Tarr is working on the handbook under Pattison, and Harris is in charge of the meetings division. Elections will be held at a dinner meeting on Tuesday, March 26, and the newly elected officers will be installed at the succeeding meeting.

FRESHMEN RECEIVE ADVICE ON COURSES

Conference Hours Arranged With
Heads of Departments

Freshmen who desire advice on the selection of their courses are given an opportunity for consultation and advice with their respective department heads. The conference hours are from 3 to 5 o'clock today and next Monday. Heads of the various courses may be consulted at that time in the following rooms:

Courses	Room
Aeronautical Engineering	33-309
Architectural Engineering	Rogers
Architecture	Rogers
Biology and Public Health	10-405
Building Construction	5-239
Chemical Engineering	2-129
Chemistry	4-173
Civil and Sanitary Engineering	1-163
Electrochemical Engineering	4-112
Electrical Engineering	4-204
Engineering Administration	1-171
General Science and Engineering	2-172
Geology	4-354
Mechanical Engineering	3-173
Mining and Metallurgy	8-219
Naval Architecture	5-123
Physics	4-236

ACTIVITIES TO HOLD TEA DANCE APRIL 13

Announcement was made in the Institute Committee meeting last Thursday that the Activities Tea Dance would be held in the North Hall of Walker Memorial on April 13 at 3:30 o'clock. This dance is an annual affair that usually was one of the features of Junior Week. With the abandoning of this week, it was decided to hold the tea dance on the afternoon following the Carnival.

GYMNASTS LOSE TO NAVY AS SWIMMERS CAPTURE SECOND PLACE IN INTERCOLLEGIATES

LUEY AND JAROSH LOSE CLOSE RACE

Four Records Broken in Annual
Intercollegiate Meet by
Brown Swimmers

By placing second in the New England Intercollegiate Swimming championship meet held at the University Club last Friday evening and Saturday afternoon, the swimming team terminated a most successful season. Brown took first place and Springfield third. Four records went by the board, and the time for the three hundred yard medley was unofficially broken by Brown of Springfield when the winner was disqualified. Schott of Williams was the star of the afternoon, breaking the time for the two hundred yard breast stroke and unofficially beating his own record in the individual medley but being disqualified in this event for an improper turn.

Brown University captured nearly every first place but the Cardinal and Gray trailed them closely and in no event were they defeated by more than a narrow margin. Springfield proved to be a dark horse. Having remained quite obscure all season she gave the Engineers a few bad moments early in the afternoon. Much to the surprise of everyone Brown of Springfield gathered a two foot lead on Ed Mackay who was unable to cut it down.

Friday night Brown succeeded in qualifying fifteen men for the finals (Continued on Page 3)

LIBERAL CLUB DENIED PERMISSION TO MEET

The application of the M.I.T. Liberal Club to hold a meeting next Thursday afternoon to discuss the subject "Military Preparedness" has been denied. As a result the meeting has been cancelled and the next meeting will be held on Tuesday, March 28, at which time Mr. Gardner Jackson, who has for sometime been active in newspaper work in Boston, will address the gathering.

Study Steam at High Pressures in Laboratory of Physical Chemistry

Extended Steam Tables Are Being
Formed for Presentation
at Conference

(This is the first of a series of features articles describing the work progressing in the many interesting laboratories and experiments stations in the Institute. Watch for more of these—learn to know Technology.)

Investigation of the properties of steam at high temperatures and under high pressure is one of the research projects of international importance being conducted in the Institute laboratories. For the past seven years the Research Laboratory of Physical Chemistry has been working on this problem, collecting much valuable data which is now being used in the formulation of new steam tables. The work is nearing completion and the results will be published in full within a year or two. Doctor Frederick G. Keyes, head of the Chemistry Department and Director of the Research Laboratory, has been in charge of the work; and Doctor Leighton B. Smith, Research Associate, has directly supervised it.

No Data Available at High Pressure
Since 1900 the tendency in boiler and steam turbine construction has been toward higher pressures and

Results of Institute Sports This Weekend

Boxing:	Dartmouth 3
Varsity 3	
Wrestling:	
New England Intercollegiate	
Varsity 4th.	
Freshmen 1st.	
Gym:	
Varsity 22	Navy 32
Fencing:	
Freshman 2	Providence H. S. 7
Swimming:	
New England Intercollegiate	
Varsity 2nd.	

Walker Memorial To Be The Scene Of Pop Concert

Program Includes Popular and
Classic Pieces, Also
Specialty Act

Preparations are under way for the annual Pop Concert and Dance of the Musical Clubs to be given in Walker Memorial at 8 o'clock on Friday, March 22. At the conclusion of the concert program, dancing will be held from 10:45 to 1 o'clock the music for which will be furnished by the Technicians.

The members of the management have been working to make this affair one of the most successful of its predecessors and to this end have arranged a program of popular, classic and semi-classic pieces, many of which are presented for the first time by the Glee, Banjo, Saxophone and Instrumental Clubs. A special act whose nature has not yet been divulged will form an added attraction.

The tradition of Pop Concerts is an old one, dating back in the annals of Boston to the time when women wore hoop-skirts and men their swallow tails. Like many other customs it has been kept alive by appeal to the imagination of the public who picture the sawdust floors where their forebears partook of stronger grades of fizz and Chopin and Mendelssohn.

Tickets for the concert and dance will be on sale in the Main Lobby every day from 12 to 2 o'clock, and will cost \$1.50.

temperatures. In the early days a 150 pound boiler was considered dangerous and even locomotives were run below 200 pound pressure. The greater efficiency and economy of superheated steam at high pressures soon led the mechanical engineers to design turbines for these conditions. A 380 pound pressure was used for a while, then a jump was made to 600 pounds, and next the Edison Company used pressures of 1200 to 1400 pounds. At present time pressures as high as 3200 pounds are being used, which is very near the critical point of water.

In designing such turbines the mechanical engineer had no accurate information on the properties of steam above 600 pounds pressure. The lack of agreement between various attempts made to extend the old tables by extrapolation served to emphasize the need for new measurements.

M. I. T. Chosen to do Research
In 1921 the American Society of Mechanical Engineers laid out a program of research to extend the available data on the properties of steam. Professor Harvey N. Davis, at Harvard University, was assigned that part of the work dealing with throttling experiments. The Bureau of standards at Washington took over (Continued on Page 4)

NAVY WINS MEET BY SCORE OF 32-22

Side Horse Is Closest Event As
Only Five Points Are
Between Winners

By losing to Navy last Saturday the Gym team completed its regular season for this year. The score of the meet was Navy, 32; M.I.T., 22. The meet was closely fought all the way through and lived up to the expectations of those who were looking forward to a lively encounter. Wells of the Technology team was the high scorer of the meet. He took first on the parallels, second on the high bar, and second on the rings for a total score of eleven points.

Wells' first series on the high bar was the best ever seen at Navy but during his second he broke. This break caused him to be nosed out by Hughes of Navy for first place. The side horse was the closest event of the afternoon. In this event Adamson of Navy, and Fairchild and Moore of Technology were separated by only five points. Adamson took first with 567, Moore second with 563, and Fairchild was third with 562. This is the first time this year that Moore has beaten Fairchild. His second series was a wonderful piece of work and brought him ahead of Fairchild in the scoring honors.

Wells Takes First
The parallel bars was the event in (Continued on Page 3)

Carnival Tickets Will Be On Sale

Activity Booths to Accept 5 Cent
Tickets Instead of Cash
This Season

Tickets for the various exhibits at the All-Technology Carnival which will be held in the Armory on April 12 from 8 o'clock until 12 o'clock must be purchased from the committee's booths on the carnival lot. All amusements will cost five cents and must be paid for by ticket. No organization will be allowed to collect cash but must accept the committee's special tickets. The board will have its ticket booths conveniently located on the Armory floor in order to accommodate the crowds expected.

This system is being used to insure the committee having a complete check up on the receipts of each exhibit. It will also eliminate the necessity of each booth having to bother with making change. At the conclusion of the carnival, each amusement will receive cash from the committee in return for the tickets which were taken in.

TWO PLAYS WILL BE GIVEN BY DRAMASHOP

As a part of the general plans for Open House, April 27, the Dramashop is planning the production of two one-act plays. The first will be "The Face of the Worthy Lawyer", an individual French comedy, and the second "Helena's Husband", a modern comedy by Philip Moeller. The staging of the first of these requires a cast of four men and one woman who have long speaking parts and about ten extras for minor lines and mob scenes. "Helena's Husband" requires three men and two women. As the casts will not be duplicated there will be parts for a large number of actors. Preliminary try outs are to be held on Tuesday afternoon at 5 o'clock in Room 2-178. At that time the general idea of the plays will be sketched.

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A REAL ISSUE

WE call attention of the readers of THE TECH to the communication published elsewhere on this page in the "Open Forum" column. In it is presented the views of the president of the Liberal Club regarding the refusal given that club to hold at the Institute a debate on "Military Preparedness".

This contribution is the view of one man on the subject. Such a question as this is important—it has several sides, all probably as well substantiated as is this. Is there to be a restriction on the expression of student thought at the Institute, and if so, to what extent shall it be limited, while still professing those principles of democracy which are our birthrights?

The Liberal Club has chosen the only possible course for the present in not attempting to stir up trouble regarding this question of freedom of speech. They have shown themselves truly a tolerant and liberal-minded organization. There is an important issue involved in this occurrence, and THE TECH will be glad to hear any expression of opinion on the subject from student or faculty member.

TECHNOLOGY'S HIDDEN WONDERS

MANY of us, even after a considerable stay in the Institute, still regard it as a factory. All we see in its accomplishments is this—raw material being fed into one end, and finished engineers coming out the other. We think of it as a routine process, a sort of industrialized education. Never a thought do we give to the fascinating studies which are being carried on constantly, experiments which may change living conditions all over the world. Day after day we all walk through laboratories in which is carried on research which may revolutionize a phase of an industry, or bring into existence some new substance.

In spite of what is happening all around us, the belief has become current among undergraduates that all the important scientific advances are now being made through industrial research and that the universities no longer hold leading positions in making developments for the benefit of civilization. One explanation for the prevalence of this view is the post-war expansion of the research laboratories of the large corporations and the great amount of publicity given this expansion. A second explanation is the scanty publicity received by the pure science research programs and the general service investigations being carried on by the leading educational institutions.

The research laboratories of the Institute are engaged in investigations of far-reaching importance. Many of the problems have vital relations to great present-day industries, many are transforming small processes into large businesses, many are the foundations of potential industries which may eclipse all present corporations. Some of the research programs make no attempt at industrial application but aim merely to extend man's knowledge. In the field of public health valuable contributions to man's welfare are being made. All fields from the oldest profession of man, warfare, to the latest production of his inventive genius, television, are being actively investigated and developed in the laboratories of the Institute.

Students know too little about this research. Totally unaware of anything but our own affairs, most of us study unobservantly and are ignorant of the original work progressing here, where civilization is being changed right before our eyes. Therefore, with this issue, THE TECH initiates a series of feature articles describing the work being done by these laboratories. It is hoped that they will not only be interesting and instructive but stimulative as well. A true pride of Technology's position in the scientific world should be engendered by them, for they form an imposing array of accomplishments, extensive programs, and bold ventures.

The first article deals with work of the Research Laboratory of Physical Chemistry which was the first, and for a long time the only, research laboratory in the United States devoted to the development of the field lying between the previously loosely defined borders of physics and chemistry. This laboratory was founded in 1903 and its activities have had a decided effect upon the development of chemistry in this country. A number of researches are now in progress, the one described in this issue being one of those nearing completion.

As We See the Movies

METROPOLITAN

Melodramatic at the start, mysterious and full of action throughout, "Chinatown Nights" keeps the Met audience this week "on its toes." On the screen one sees a weird Chinese quarter whose deep intrigue and dark treachery are not the sham that most "Rubbernecks" think they are when going through these districts in a bus.

Wallace Beery is the hero, or villain as you will. As "Chuck" Riley a white man but leader of one Chinese tong, he plays the part of the strong, jovial, danger-loving gangster in a manner par excellence. "Boston Charlie" (after all, he is the real villain) the role portrayed by Warner Oland, is his bitter rival, and the story centers around the struggles of these two men for supremacy of Chinatown.

And then—"Enter the woman." Florence Vidor, as the young girl from "Uptown," comes down to the Chinese quarter for a thrill. She receives a double one—almost as the picture begins, a Chinaman is shot, and then, for thriller number two, Miss Vidor see "Chuck," with whom, inconspicuously, she immediately falls violently in love.

And so the story goes on—Tong War, violent death, passionate love, consuming hate. Cave man stuff a la mode is Wallace's long suit; it's worth admission to watch that man "get his woman." "Hate 'em and beat 'em—they like it" is his motto. Of course in the end, he realizes his folly and he and Florence leave Chinatown to the Chinese. It is a good picture, though, and "All-Talkie" which you'll enjoy for a change.

With Spring in the air, with many of us making chip shots off the living room rug and getting the knickers out of the moth balls, "Fore," the Publix Stage Show, is very timely. Alex Morrison, a famous trick golfer, heads the cast, and executes many intricate shots. Brian MacDonald brings some good songs and a fast repartee of dialogue from "Vanities." Olive Fay accompanies herself on the guitar and sings popular numbers and Cliff Crane and Wilton Crowley, clever comedians, are responsible for many hearty laughs. The Albertina Rasch girls with some fine dancing provide a colorful setting for the whole show.

Away from the Grind

This week-end has seen several private dances and parties, as a contrast to last week's open parties. St. Patrick's day called for exhibition of shamrocks and green ribbons in some of the houses, while others completely forgot the importance of the day.

LAMBDA CHI ALPHA

Following an established custom, a tea dance was held at the Lambda Chi house Saturday afternoon, preceding the seventeenth annual initiation banquet. The Technicians furnished the music for the occasion, and everyone had a good time. The initiation banquet at the Somerset followed the tea dance, at which delegates from the ten New England chapters of Lambda Chi Alpha were present. Professor Donald S. Tucker was the speaker of the occasion, and Professor Samuel C. Prescott was present as an honorary member of the fraternity. As a present to the

THE EDITORIAL SPECULUM

Technology's swimming team has completed an extremely successful season, its closing act being to place second in the New England intercollegiate last week-end. The thing that makes us wonder is how on earth did they do it?

Not that the team itself isn't strong—with Luey and Mackay both breaking records during the season—but the astonishing fact is that they won seventy-five percent of their meets, despite the noticeably poor support on the part of the Institute.

Every year \$60,000 goes to the crew house. Every year \$1300 goes to the support of the swimming team. The crew works out in its own shells, from its own docks and on its own machines. The swimming team is able to secure the University Club three times a week for practice. Crew is perhaps the most important sport at Technology, and it is undoubtedly an expensive undertaking, but it does look as if a sport which has spread the name of Technology by winning from such teams as Columbia, Amherst, Wesleyan, and Rensselaer, and putting up good fights against West Point, Worcester Polytech and Brown, should receive more than one forty-fifth as much. Favoritism should be

To the Editor of THE TECH:

The application for a room to hold a meeting next Thursday afternoon on the subject of "Military Preparedness" has been denied the M. I. T. Liberal Club. As a matter of record and information to those interested in the activities of the club, I wish to set down in some detail the facts surrounding this action taken by the administration against discussions on this subject. By thus stating openly and frankly the whole situation, I leave the issue directly in the hands of the administration and the student body and hope for a more liberal attitude in the future.

Two weeks ago, March 2nd to be exact, an application for a room in which to hold a debate on "Military Preparedness" was made to the registrar. The names of the proposed speakers and the nature of the proposed discussion were also submitted for the approval of the administration. The following Tuesday word was handed down from the registrar that discussions at the Institute on Religion, Politics and Militarism were looked on with great disfavor and therefore inadvisable. After long deliberation, the executive committee of the Liberal Club decided to place the matter before President Stratton for the final word of the administration.

As a representative of the Liberal Club, I had the opportunity last Saturday morning to discuss this ruling with the President and the following are the high-lights of the conversation. (I am withholding certain remarks that were made in confidence.) There are three subjects, President Stratton stated, that should not be discussed. They are Religion, Politics and Military Preparedness. There is no argument about preparedness. Every intelligent and informed person knows that it is the only way to peace, and any discussion about it would merely cause confusion and ill-feeling. Therefore the Liberal Club is advised to steer clear of such questions. The President also made clear that he thought the original purpose for the formation of the organization was not to discuss "vital" questions but to foster and disseminate radical thought. This is briefly and accurately a summary of an attitude. Space does not permit me further explanation.

And now to state the student opinion—the Liberal Club was formed with the definitely expressed purpose of inquiry into the social, human problems of the day, to discuss these controversial subjects openly, freely and understandingly by having noted men present their views from its platform. It does not espouse or even entertain any cause; ideas and opinions expressed at the discussions are purely those of the speaker or individual, and in no way represent the attitude of the organization. Let me add that the past seven months' activity indicates the trend of the discussions, which has gained many friends for the Liberal Club among the members of the faculty as well as among the student body. The executive committee feels therefore that a ban on discussion of

no more at home in sports than in any other field.

Swimming pools are accepted facts in practically every tertiary school in the country, and a pool is one of the many things needed by the M. I. T. swimming team. Why Technology has been so tardy in this respect remains a mystery. A pool for the team could be also a pool for the student body as is often the case in other colleges. The students as a whole would benefit, and time and necessary practice for the team would not be wasted as at present.

Why doesn't the athletic association crash through? Or should appeals be made to a different quarter? Why can't the alumni who endow laboratories for disturbing the cockroach from his native habitat, make some donations for the development of one of the most outstanding sports at Technology?

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— THE OPEN FORUM —

any question not only seriously limits the functions of a liberal organization but abridges the fundamental rights of man to search for truth, be it social or scientific.

Furthermore, in answer to the accusation of President Stratton and those who think similarly concerning the real purpose of the Liberal Club, the executive committee feels that the best interests of the organization will be served by dropping all discussion of "military preparedness" and focusing attention on other social problems. The Liberal Club wants its rightful place as a cultural force in the lives of the students; it does not intend its members to be the thoughtless servants of any creed, whatever its protective label may be. I know this passive attitude toward the censorship imposed by the administration will be severely criticized but the first duty lies establishing the organization as a necessary institution and then to continue the fight for a greater freedom in discussion.

As a present policy, the Liberal Club will stand entirely aloof from any consideration of "military preparedness." The meeting for next Thursday has been cancelled; the next scheduled meeting will take place the following Thursday as usual.

For an unhindered scientific spirit of investigation, I am

Respectfully,

(Signed) Murray Brimberg, Pres.
M. I. T. Liberal Club
March, 16, 1929

Play Directory

Tickets for all theatres may be bought at Box-Office Prices from the T.C.A., Walker Memorial.

Stage

COLONIAL: "Billie"
Charming story, musically told, of a determined young girl's success over bold, bad city-slickers.

COPLEY: "The Ring"
Another thrilling play from the prolific pen of Edgar Wallace.

HOLLIS: "The Other Man"
On its way to New York. With Edna Hibbard and William Boyd.

PLYMOUTH: "Paolo and Francesca"
Jane Cowd revives a beautiful old-timer, written in full-mouthed verse.

MAJESTIC: "The Skull"
Mystery drama which has been flourishing for a year in other parts of the country.

REPERTORY: "The New Henrietta"
One week only of a Fifth Avenue family and the stock market.

SHUBERT: "Manhattan Mary"
"The Perfect Fool" disports himself in surroundings of gay music and pretty girls.

ST. JAMES: "The Wooden Kimono"
Of a lonely tavern, marooned travelers, detectives, writers and bootleggers.

WILBUR: "The Trial of Mary Dugan"
Ninth week of a hit.

Screen

LOEW'S STATE: "The Iron Mask"
Douglas Fairbanks brings a sequel to "The Three Musketeers".

METROPOLITAN: "Chinatown Nights"
Reviewed in this issue.

FENWAY and OLYMPIA: "The Re-deeming Sin"
Conrad Nagel and Mrs. John Barrymore in a story of the Parisian underworld.

KEITH MEMORIAL: "The Crash"
Don't miss the Duncan Sisters on the stage.

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BOXERS TIE WITH DARTMOUTH FRESHMAN MATMEN WIN NEW ENGLANDS

Engineers Win Three of Six Bouts—Bolanos Has Long List of Victories

In their last meet this season, the Varsity boxing team tied the powerful Dartmouth mittmen by winning three of the six bouts last Saturday afternoon in the Hangar Gym. Captain Bolanos again won over his opponent in the Dartmouth meet, ending an undefeated season. Jameson, who also had an unmarred record, lost his first match this season, when Alton of Dartmouth scored a three round decision over the hard hitting Engineer.

In the first bout on the program, Orleman, the fast 115 pounder scored an easy victory over his opponent. In the first round, Orleman knocked his man down, but Watchinsky rallied, and saved himself from a knockout. In the second round Orleman led his opponent by a large advantage, which he kept through the third, taking the bout by decision.

Lamoretti, the weaving Engineer mittman, completely baffled Shaskan of Dartmouth, and won easily in the 125 pound class. He scored hard left hooks, that had Shaskan groggy, but was unable to send his man to the floor for the count.

Bolanos Still Unbeaten

Captain Bolanos, again was victorious, when he won a close decision over McIntosh in the 135 pound class. The bout was fast, and both men scored hard punches, but Bolanos showed more experience, and scored easily with lefts in the first and second. Early in the first round, McIntosh received a bad cut over the eye on a left hook, which bled hard throughout the fight. The third round was very close, and the bout closed with both men trying for a knockout.

Jameson's defeat in the 145 pound class came as a surprise to both teams. Alton, the Dartmouth 145 pounder, started on the aggressive, with Jameson stepping back and looking his man over. In the last half of the round, Jameson sent over some stinging left hooks, which evened the first round to a draw. In the second, Alton kept on the aggressive, and took a slight advantage, both men scoring hard hooks to the jaw. In the third, Alton kept up his aggressive style, and scored on Jameson, who showed signs of tiring, and was able to take the decision from the unbeaten Engineer.

Roggi Loses Close Bout

Roggi, who fought in place of Engler, lost the closest fight of the meet to Bragner, the 160 pound Dartmouth man. In the first, Roggi scored a knockdown on a hard left to the face, but Bragner was up on the count of five. Roggi kept after his man, trying for a knockout, but Bragner was able to keep the hard hitting Engineer off for the rest of the round. The second went slowly, both men

saving themselves for a final effort in the third, and both missing on hooks to the face. In the final round, Bragner took a slight advantage, which won him the bout, when he scored with hard punches to the head and body. The 175 pound battle was forfeited to Dartmouth, due to Horton's injured nose, which kept him from boxing.

Due to the absence of the official referee, Tom Martin; Edward Shevlin, former welter-weight champion of the world, officiated. Tom Rawson, son of Coach Rawson was one of the judges; Lasserman, former amateur boxer, was the other. All of the bouts were fought under the rulings of the Intercollegiate Boxing Commission.

YEARLING NATATORS TAKE FOURTH PLACE

Captain Luey Loses Title in Fifty Yard Backstroke

(Continued from Page 1)

while Technology followed closely with twelve and Springfield ranked third with nine entries. At the finish of the trials five records had unofficially been bettered and Saturday this same performance was repeated officially, in four of the events.

Every Event Hard Fought

The first event of the day was the medley relay and one of Technology's strong points. Birnbaum gained a good lead but Lutz was unable to hold it against Sitler and the Cardinal and Gray was slowly forced back for a third. Technology was unable to get a man into the finals of the fifty yard dash which was taken by Brown whose three qualifiers gathered in the first three places.

Jarosh made an excellent showing in the four hundred and forty yard swim against Henry of Brown the only man who has defeated him all season, for sixteen lengths Jarosh maintained a six foot lead. As the two men came into the last lap of their long grind Henry unleashed an unexpected sprint to nose the Engineer out by inches.

Medley and Backstroke Upset

The individual medley was a starting upset when Mackay was beaten by Brown of Springfield and Schott of Williams. Ed recently lowered the old New England time by ten seconds and the present Institute time which is held by him is lower than the existing New England time. Captain Larry Luey's defeat in the hundred and fifty yard backstroke also came as a surprise when he surrendered his title to Arnold of Brown in a record breaking time. Luey was also passed by Sitler another Brown man.

Schott of Williams set a new time for the two hundred yard breast stroke by barely edging past Birnbaum in the last few feet. Birnbaum made a fine showing in both this event and in the three hundred yard medley relay. The hundred yard dash found Torchio well up in the running and the event finished with all four men almost in a dead heat. The judges finally con-

(Continued on Page 4)

CARNIVAL

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M. I. T. WRESTLERS PLACE FOURTH IN INTERCOLLEGIATES

Captain DerMarderosian Holds 1929 Championship in 145-Pound Class

COOPER WINS A SECOND

Winning fourth place in the Varsity Intercollegiate held Saturday night at Harvard in the Hemenway Gymnasium, the Engineers scored one first and one second for a total of 8 points. The powerful Brown team won first with 24 points, Tufts a close second with 20, Harvard third with 17, M.I.T. fourth with 8, and Williams fifth with 6 points.

Chibas, the 115 pound Varsity wrestler, defaulted to Stella of Tufts in the first match, who won in the finals by a fall over Cardar, of Brown in an overtime period.

Perkins Loses 125 Class

In the 125 pound battle, Perkins lost to Sten of Brown by a time advantage of 6 minutes and 36 seconds. Perkins worked hard and kept his man from scoring a fall, but lost a chance for a try for second place when Stein defeated Burns of Harvard by a time advantage of 4 minutes and 34 seconds. Garcelon of Tufts won the championship when he defeated Burns by a time advantage of 3 minutes and 38 seconds.

Williams won their only first, when Lisle their 135 pounder defeated Anderton of Brown for the championship. Cooper, the 135 pound M.I.T. wrestler, won second when he also defeated Anderton by a time advantage of 1 minute and 9 seconds, after losing to Lisle, Friday night by a time advantage of 4 minutes and 51 seconds.

DerMarderosian Wins

Technology won its only first when Captain DerMarderosian, after defeating Hing King of Tufts, Friday night, also gained a time advantage over Lifrak of Harvard, in one of the slowest matches of the evening. Both men were extremely careful, but in second overtime Captain DerMarderosian held his man to the mat and won by the small time advantage of 1 minute and 5 seconds.

Robinson of Harvard defeated Pitblado of M.I.T. in the 155 pound class, when the Harvard man held the Engineer to the mat for the advantage of 7 minutes and 45 seconds. In the finals Cornsweet of Brown defeated the Harvard man for the championship, when the famous wrestler from Brown held Robinson to the mat for all but five seconds of the full ten minute period.

Stone Wins Preliminary

Stone, the Cardinal and Gray 165 pounder, won his first match from Chase of Williams when he held the Williams wrestler on the bottom for 7 minutes and 48 seconds. In his second match he was defeated by Wentworth of Brown, who later won the championship when the Brown man threw the strong Engineer in 7 minutes and 52 seconds. In the battle for second place, Stone lost to Kaufman of Harvard by the time advantage of 5 minutes and 37 seconds in a hard fought match. Stone came within an inch of winning this match but was unable to hold the Harvard man to the mat.

Technology forfeited both the 175 and the unlimited weights, Hingston of Tufts winning the 175 pound championship, and Cornsweet of Brown scoring a close time advantage of 1 minute and 54 seconds over Warner of Harvard in one of the hottest matches of the evening for the heavy-weight championship.

Last week the crews had a record number of men on the river. On Tuesday and Wednesday afternoons there were six shells out for intensive workouts under the direction of Coach Haines. With a flotilla of three Varsity boats, two 150-pound Varsity, and the first freshman, the river in the vicinity of the boathouse was a scene of great activity.

Coach Haines has been handicapped in his practice sessions because of the fact that only one motorboat was available from which to direct six crews. The latest reports from Winthrop state that the two launches that have been in dry dock were returned to the water last Thursday, and will soon be delivered to the boathouse.

Yearlings Defeat Tufts Wrestlers to Win Title of 1929 by Five Points

Ending one of the most successful seasons ever experienced by an Engineer yearling mat squad, the freshman wrestlers won the New England Intercollegiate Championship, when they defeated a field of four colleges last Saturday night in the Hemenway Gymnasium at Harvard. M.I.T. took three firsts in the finals, and two seconds, while Tufts took second with 24 points; Harvard third, with 19; and Brown fourth with 15.

First to win laurels on the mat was the strong little 115 pounder, Axford. On Friday he won easily over Johnson of Tufts by a fall, in 4 minutes and advanced to the finals held on Saturday. In this match he met Cook of Harvard, and after 7 minutes and 45 seconds of hard wrestling, in which Axford made several wonderful breaks, one of which was the famous DerMarderosian roll, he turned his man over with a half-nelson for a fall.

Knoepple Loses

Knoepple, the Engineer 125 pounder, lost his first match to Owrey of Brown by a fall after 5 minutes and 8 seconds, when Owrey turned the Engineer over with a head lock. Owrey lost in the finals to Lohmeyer of Tufts by a small time advantage of 1 minute 50 seconds.

Dunleavy also lost his first match to Elsas of Harvard in the 135 pound class, when the Harvard man scored

a fall over the Engineer with a half nelson and body hold, after 2 minutes and 19 seconds of wrestling. In the finals Saturday night, Elsas won over Hilliard of Brown by a fall in 5 minutes and 57 seconds. Dunleavy, wrestling Hilliard for second place, lost by a fall in 3 minutes and 5 seconds.

Vassalotti Wins 145's

In the 145 pound yearling match, Captain Vassalotti again won for the Cardinal and Gray, when he defeated Skivak of Brown by a fall with a half nelson and head hold after 7 minutes and 9 seconds. In the finals Vassalotti was again victorious, winning by time advantage of 4 minutes and 42 seconds over Guyer of Harvard, making the second first place for the Engineers.

Negus, the 155 pounder, won his first match on Friday, when he pinned Small of Brown with a half nelson after 8 minutes and 14 seconds of wrestling. In the finals on Saturday, Negus lost to Peck of Tufts by a fall just 15 seconds before the final bell, and took a second place for the Engineers.

Ward Wins Two Matches

Next to win for Technology was Ward, when he threw both of his opponents for the championship. In the first match on Friday, he threw Levine of Harvard, with a nelson and crotch hold. On Saturday he was again victorious, when he threw Norinasian of Tufts in 6 minutes and 30 seconds for the championship.

In the 175 pound matches, Pratt, the Engineer matman, lost his first match to Gallivan of Tufts by a time advantage of 7 minutes and 20 seconds. In the finals, Gallivan was defeated by Linder of Harvard in 2 minutes by a fall, Linder using a half nelson and crotch to pin his man.

In the heavyweight class, Rabinowitz was pinned in his first match, but won a second when he won a small time advantage over Estok of Tufts, who lost a close match to Tietz of Brown for the championship. In the first match Rabinowitz met Tietz of Brown, and lost in the first four-minute period when the Brown man scored a fall in 2 minutes and 34 seconds. In the finals, Rabinowitz defeated Estok of Tufts by the time advantage of 1 minute and 8 seconds.

DOLLOFF WINS FIRST IN TUMBLING SERIES

Wells Is High Point Man for Technology Gymnasts

(Continued from Page 1)

which Technology men starred. Wells took first to beat out Cushing of the Navy while Reynolds took third place. Reynolds did the best series he has ever done in this event but it was not quite good enough to take any more than a third place. Reynolds and Wells were again the scorers for Technology when Wells took second and Reynolds third on the rings.

Dolloff lived up to expectations when he took first place in tumbling. He won out from Palmer and Perrault of Navy. His series was good and it deserved to win from the applause that greeted it. In the rope climb, Galbraith of Navy again equalled the world's record of 42-5 seconds. In this event, the Navy men took all three places. Galbraith should win the Intercollegiate if he keeps up the same work he is doing now.

Intercollegiate Next Saturday

The Eastern Intercollegiate Gymnastic League competitions are to be held at Philadelphia next Saturday. This meet can be taken as just a continuation of last Saturday's meet as far as Technology and Navy go. Adamson, Fairchild, and Moore were too close in scoring honors to let the side horse be final. There is sure to be keen competition by the Technology men to take away the first place honor that Adamson took the day before yesterday.

Horizontal bar—Won by Hughes, Navy, 571; Wells, M.I.T., 547; Perrault, Navy, 491.

Rope Climb—Won by Galbraith, Navy, 04 2-5; McElroy, Navy, second, 05; Larson, Navy, third, 05 3-5.

Side horse—Won by Adamson, Navy, 567; Moore, M.I.T., 563; Fairchild, M.I.T., 562.

Parallel bars—Won by Wells, M.I.T., 522; Cushing, Navy, 519; Reynolds, M.I.T., 413.

Flying rings—Won by Lockwood, Navy, 563; Wells, M.I.T., 539; Reynolds, M.I.T., 537.

Tumbling—Won by Dolloff, M.I.T., 570; Palmer, Navy, 559; Perrault, Navy, 508.

Score—Navy 32—M.I.T. 22.

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NOTICES and ANNOUNCEMENTS Of General Interest

Quantum Mechanics

Prof. W. Heisenberg

Monday, March 18, 4 P.M., Room 10-250

Professor W. Heisenberg, Director of the Institute of Theoretical Physics of the University of Leipzig, will give the second lecture in the series on "Recent Developments in Quantum Mechanics". The subject of the lecture will be "Introduction to the theory of groups".

The lecture is open to students and members of the instructing staff.

Hydraulic Experimentation

Dr. Ing. Theodor Rehbock

Thursday, March 21, 2 P.M., Room 5-330

Dr. Ing. Theodor Rehbock, Professor of Hydraulics at the Technische Hochschule of Karlsruhe, Germany, will deliver a series of lectures on "Hydraulic Experimentation". The lectures will be illustrated by moving and still pictures.

The lecture is open to students and members of the instructing staff.

Evolution

Prof. Kirtley F. Mather

Saturday, March 23, 9 and 12 o'clock, Room 5-330

Professor Kirtley F. Mather of Harvard will speak on "Evolution" at the lecture hour in English and History E22.

The lecture is open to students and members of the instructing staff.

Calendar

Monday, March 18

4:00—Second Lecture on "Quantum Theory" by Professor Werner Heisenberg, Room 10-250.

5:00—M. I. T. A. A. Meeting, Committee Room, Walker.

5:00—Senior Week Committee Meeting, North Hall, Walker.

5:00—Poetry Reading by Professor Copithorne, Walker Library.

Tuesday, March 19

5:00—Banjo Club Meeting, East Lounge, Walker.

5:00—Glee Club Meeting, Room 10-250.

6:00—Civil Engineering Society Supper Meeting, Faculty Dining Room, Walker.

5:00—Preliminary Tryouts for Dramashop, Room 2-178.

Wednesday, March 20

7:00—Chemical Society Smoker, North Hall, Walker.

Thursday, March 21

5:00—Banjo Club Meeting, East Lounge, Walker.

5:00—Glee Club Meeting, Room 10-250.

7:30—VI-A Smoker, North Hall, Walker.

Swimming Meet, Freshmen vs. Brookline High School, Brookline.

Friday, March 22

3:00—A. I. E. E. Open Discussion Meeting, Room 10-275.

8:00—Combined Musical Clubs Pop Concert, Main Hall, Walker.

Rifle Meet, Varsity vs. George Washington University at Washington.

Saturday, March 23

Rifle meet, Varsity vs. Navy at Annapolis.

Eastern Intercollegiate Gym League Championship Meet, at University of Pennsylvania.

Monday, March 25

5:00—M. I. T. A. A. Meeting, Committee Room, Walker.

Tuesday, March 26

5:00—Banjo Club Meeting, East Lounge, Walker.

5:00—Glee Club Meeting, Room 10-250.

Undergraduate

SENIOR EMPLOYMENT

Mr. W. C. H. Bowen personal director of the International Telephone and Telegraph Corporation, will visit Technology on March 21 and 22 to interview candidates for positions in this company after graduation this June. Applications for an appointment with Mr. Bowen should be made to Col. Frank Locke, personnel director of M. I. T.

DRAMASHOP TRYOUTS

Preliminary tryouts are to be held for the Dramashop tomorrow afternoon at 5 o'clock in Room 2-178. At that time the general idea of the plays will be sketched.

CALENDAR

The Student Chapter of the American Society of Civil Engineers is to have a supper meeting on Tuesday, March 19th, at 6:00 o'clock in the Faculty Dining Room at Walker.

SENIOR WEEK COMMITTEE

There will be a meeting of the entire Senior Week Committee in the North Hall of Walker Memorial this afternoon at 5 o'clock.

TIME OF YEAR BOOK REDEMPTION CHANGED

According to the latest announcement of the Technique Board, the redemption campaign of the 1929 Year Book has been changed from the last week in March to the first week in April. This change has been made so that it comes at a time most convenient to the majority of the students.

Technique will have a desk in the Main Lobby where the signups which subscribers made a month ago may be redeemed at a cost of \$3 which completes the payment for the Year Book. After April 6 an extra charge of \$1 will be made to those who are late in redeeming their signups. Also during the week of April 1 there will be a chance for a few men to get copies of the Year Book even if they did not sign up at the required time.

The University of Southern California now offers a course in motion picture training under the supervision of the Metro-Goldwyn-Mayer studio at Culver City.

FRESHMAN CLASS OFFICERS

A meeting of the freshman class officers will be held this afternoon at five o'clock in Room 10-250. Final plans for the freshman dance are to be made and it is important that all be present.

SENIOR RINGS

Rings for the class of 1929 can be secured Monday from 9 to 12 o'clock in the Main Lobby. On receipt of the ring those who ordered them will pay the remainder of the cost.

SENIORS

A representative of the W. T. Grant Company will be here on Monday, March 18, to interview seniors who are interested in Chain Store work.

Any students who desire to meet this representative should schedule an appointment in Room 3-212 at once.

SENIORS

All seniors interested in obtaining positions with the American Steel and Wire Company should make arrangements with the Personnel office, Room 3-212, for an appointment with the representative of this company on March 18.

TECHNOLOGY DANCES AT SOPHOMORE BALL

The Fountain Room of Longwood Towers was filled to capacity at the Sophomore Dance held Friday evening. At this the second annual social affair of the Class of 1931 about 250 to 300 couples attended, dancing to the music of the Tunesters. The Dance Committee attempted to prevent crashing by branding the hand of each man entering the Hall with "Soph Dance 1931," though two side doors offered free admission to more than one Technology student.

MEETING OF C.E.S. TO FEATURE FILMS

Three films illustrating construction methods on some recently completed projects will be shown at the supper meeting of the Civil Engineering Society which will be held in the Faculty Dining Room of Walker Memorial, Tuesday, March 19 at 6 o'clock.

"Driving the Longest Tunnel in the Western Hemisphere" shows the dif-

March T.E.N. on Sale Wednesday

Articles of General Interest
to Students Feature
This Issue

"The Status of the American Railroads", an article by Edward E. Loomis, President of the Lehigh Valley Railroad, is the feature of the March issue of Tech Engineering News, which will be on sale Wednesday and Thursday of this week.

This issue is one of general interest to all readers, and is not devoted to any one specific subject. An article "A President in the Making", written by Professor Waldemar Lindgren of the Geology Department is a discussion of Herbert Hoover during his career as an engineer. The story contains many interesting anecdotes and reminiscences of the President.

Other articles in this issue are "The Autogyro", a story of recent developments in vertically rising airplanes; "Increasing Recognition for the Engineer", an account of the popular feeling toward engineers at the present time; "The Cascade Tunnel", a complete account of this engineering work; and "Valuation Engineering", a brief sketch of the valuation of public utilities.

Committee Gives Suggestions for Succeeding Proms

Recommends That Future Dances
Be Made Less Expensive
and Smaller

Several recommendations for future Proms were made by the Junior Prom Committee in the report that was submitted to the Institute Committee Thursday afternoon. These recommendations were given mainly because the Committee felt that the Prom on its present basis cannot long continue.

Among the suggestions for the next committee were to plan for a smaller crowd, limit the tickets to 150 or 200, and hold the affair in a smaller ballroom. Favors and sit down suppers could be had as usual but the function would be decidedly smaller and might even be made especially a Junior Class affair.

Another recommendation was for future committees to cut down the expense of the Prom, and, by more or less changing its character, make it a more universally attended affair. The old fashioned "blow everything in one evening" Proms have proved to be no longer popular with the student who can attend parties throughout the year for a fraction of the cost of the Prom. If the tickets were less expensive the Prom would be more likely to appeal to the entire student body.

In its financial report the Committee stated that the total receipts were \$3296; expenses, \$3253.50, with a profit of \$32.50. Less than 225 tickets were sold for this year's Prom which is a decrease of about 50 from last year.

Quantum Theory Talks Continue

Professor Werner Heisenberg to
Deliver Lecture Series
at Technology

(Continued from Page 1)

He plans to spend about three weeks at the Institute, after which he may visit other eastern schools. He expects to spend five months in Chicago, and then some time in the Far West, after which he will visit Japan.

All those who heard the lecture on Friday agree that the Professor is a very interesting speaker, and knows how to present difficult subjects in a manner easily understood. Many comments were made upon the ease with which he handles the English language, his perfect choice of words being only accentuated by a slight German accent. His lectures can be clearly understood, and should prove interesting to student body and faculty alike. The second lecture of the series will be held this afternoon in Room 10-250 at 4 o'clock.

difficulties encountered in the construction of the Cascade Tunnel through the Rocky Mountains. "Building New York's Newest Subway" illustrates the technique of underground construction work in a crowded metropolis. "The Story of Steel" depicts the fabrication and erection of some modern steel structures. Those wishing to attend this meeting should sign up on the bulletin board in Building 1. The cost of the supper will be 35c.

Away from the Grind

(Continued from Page 2)

house, the new members gave a large tapestry, which will be given a place of prominence in the house. Announcement was also made of the officers for the coming year. After the banquet, the group retired to the house, where the visiting brothers were entertained.

SIGMA CHI

Another of Sigma Chi's regular formal dinners was held at the chapter house last Friday evening. Places were laid for forty people and Mr. and Mrs. James Little were the chaperones.

After the dinner most of the chapter and guests attended the Sophomore dance at Longwood Towers.

SIGMA NU

About 15 couples plus a few stragglers were present at a formal dinner given on Friday night at the Sigma Nu house. Starting at a little after 7 o'clock, the affair soon turned out to be most delightfully informal in character. As has been customary at these dinners, of which several have been given by the Sigs this year, cards, singing, dancing, or merely repartee occupied the attention of the guests after dinner just as their tastes preferred at the moment. About 9:30, the gathering started to break up, and it was not long before everyone had left for the Sophomore Dance—the affair which the dinner was planned to precede.

Their second informal closed dance of the season was given by the Sigma Nu's last Saturday, from 9 o'clock until midnight. All of the twenty-some couples present declared that the party, although small, was a huge success. Refreshments consisting of ice cream, cakes and coffee were served at about 11 o'clock. The affair was chaperoned by Mr. and Mrs. B. H. Brown.

A costume dinner-dance was held at the house on Saturday evening, March 16, for 20 of the brothers with their guests. Dinner was served at 7 o'clock and, with its conclusion, dancing was enjoyed on the first floor until midnight to the tunes of music from the victrola-loudspeaker.

A variety of costumes consisting partly of devils, pirates, Mexicans, Italians and Russians helped to make the dance a gala affair. The chaperones, Mr. and Mrs. Cannon and Mr. and Mrs. Kingsley, picked the two best outfits whose owners were given prizes.

BROWN TAKES FIRST AT SWIMMING MEET

(Continued from Page 3)

ceeded first to Captain Hall of Brown with Torchio of M.I.T. second and Barrows of Brown third.

The two hundred yard relay turned into another duel with Brown barely getting the lead for a final win.

Five freshman relay teams were entered and the Engineer yearlings managed to get into the finals. They were forced into fourth place when a Williams man accidentally got out of his lane and forced Abbot against the wall.

Summary:

Two hundred yards freshman relay, all teams timed. First heat—Won by Wesleyan (Howell, Krantz, Wilcox, Griggs), time, 1m. 45s.; second, Springfield (Harden, Crowley, Brown, Fisher), time, 1m. 47 3-5s.; third, M.I.T. (Levinson, Teague, Abbott, Rinehimer), time, 1m. 50s. Second heat—Won by Williams (Swift, Downs, Swayze, Kerr), time, 1m. 48 1-5s.; second, Brown (Gardner, Carpenter, Ferguson, Koebigg), time, 1m. 53s. Wesleyan, M.I.T., Springfield and Williams qualify.

Final—Won by Wesleyan; second, Springfield; third, Williams; fourth, M.I.T. Time—1m. 46s.

Three hundred yards medley relay race—Won by Brown (Sittler, Borden, Arnold), second, Springfield (Bartholome, Ford, Clark); third, M.I.T. (Luey, Birnbaum, Lutz); fourth, Williams (Davis, Schott, Higginbotham). Time—3m. 24 1-5s. (new New England record).

Fifty-yard dash—Won by Hall (Brown); second, Pearce (Brown); third, Barrows (Brown).

Four hundred forty yards swim—Won by Henry (Brown); second, Jarosh (M.I.T.); third, Littlefield (Springfield); fourth, Clark (Springfield). Time—5m. 45 3-5s. (new New England record).

Medley swim final—Won by Brown (Springfield); second, Mackay (M.I.T.); third, Appleton (M.I.T.). No time. (Schott, the winner, disqualified for improper turn in back stroke.)

Pancake Diving—Won by Bruce (Brown), 80.2; second, Walker (Springfield), 77.8; third, Tawter (Worcester), 72.2; fourth, Lykes (M.I.T.), 70.2.

One hundred and fifty-yard back stroke—Won by Arnold (Brown); second, Sittler (Brown); third, Luey (M.I.T.); fourth, Kleene (Amherst). Time—1m. 48 3-5s.

One hundred-yard swim—Won by Hall (Brown); second, Torchio (M.I.T.); third, Barrows (Brown); fourth, Rogers (Worcester). Time—56 3-5s.

Two hundred-yard breast stroke—Won by Schott (Williams); second, Locke (Bowdoin); third, Birnbaum (M.I.T.); fourth, Gregg (Williams). Time—2m. 4s. (new New England record).

Two hundred-yard relay—Won by Brown (Pearce, Arnold, Hall, Barrows); second, M.I.T. (Mackay, Baker, Luey, Torchio); third, Springfield (Humphreys, Clark, Brown, Ford); fourth, Wesleyan (Hibbard, Parr, Bodell, Peck). Time—1m. 42s. (new New England record).

Prepare Data on Steam Pressures

Choose Institute to investigate
Temperature-Pressure—
Volume Relation

(Continued from Page 1)

the measurements of specific heats and heats of vaporization. The Massachusetts Institute of Technology was chosen to investigate the pressure-volume-temperature relations.

Photo-Electric Cell Temperature Control

In undertaking the work at M. I. T. the first problem to face was that of designing accurate and reliable equipment with which to make the measurements. For determining temperatures platinum resistance thermometers were chosen as they offer the most ready means of accurately measuring temperatures.

In order to keep the temperature constant during a measurement an automatic electrical regulator was devised. This consisted of a resistance element immersed in the high temperature bath and forming one leg of a Wheatstone bridge. Any change in the temperature of the bath changed the resistance of the element and consequently unbalanced the bridge. A sensitive reflecting galvanometer connected across the bridge was thus set in motion. A strong beam of light was reflected from the mirror of the galvanometer on to a photo-electric cell. The current from the cell was amplified enough to operate a relay which controlled the heating current of the high temperature bath. The arrangement works extremely well, controlling the temperature with an accuracy of .002 of a degree Centigrade.

Composition of the Bath

An oil bath, such as is commonly used for this sort of work, proved unsatisfactory due to the carbonizing of the oil at high temperature. Several different kinds of oil were tried but none proved suitable. Finally choice was made of a mixed of sodium, lithium and potassium nitrates which has a melting point at 140 degrees Centigrade and is very fluid at the temperature used.

Measuring the Pressure

The ordinary types of pressure gauge were obviously far too inaccurate so use was made of the dead weight type. This, in its highly refined form, consists of a cylinder with perfectly fitting piston. The pressure of the steam is transmitted first by mercury and then by oil to the bottom of the piston. The pressure exerted upon the bottom of the piston is exactly balanced by weights bearing upon the top of the piston. When the pressure is balanced in this way there will be no tendency for the piston either to rise or to fall in the cylinder. An electrical contact device serves to indicate when balance has been established. The sensitivity of the pressure measurements is about one part in 40,000 even at very high pressures.

New Steam Tables to be Made
There is to be an international conference in England this summer when it is hoped that an agreement can be reached which will permit the setting up of international steam tables. It is expected that the data gathered at the Institute will receive major consideration there.

Every country in North America is represented when Yale holds its Prom. One of the Prom girls even came from France. To show the international character of the college, a shell was displayed in which Yale won the Olympic championship in 1924.

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